

Standard precautions: Awareness, practice, and adherence among obstetrics and gynecology resident doctors of a tertiary care hospital

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ABSTRACT


Background: Infection control occupies a unique position in the field of patient safety since it is universally relevant to health care workers and patients at every single health-care encounter. Most of the healthcare-associated infections are preventable. Through this study, the awareness, practices, and adherence to standard precautions among the resident doctors were sought. **Objectives:** The objectives of this study were as follows: (1) To determine the level of awareness, practices, and adherence to standard precautions for infection control among resident doctors and (2) to determine factors affecting infection control. **Materials and Methods:** After obtaining permission from the Institutional Ethics Committee, an observational study was conducted among the resident doctors in the post-natal care ward (PNC) of a tertiary care hospital. Data collection was done using direct observations, a structured validated interview schedule, and discussions with 21 resident doctors working in the PNC. **Results:** About 71% of the study population had received a training in standard precautions. Specific infection control protocol as suggested in standard precautions was followed for infection control by 76% of the population. Hepatitis B vaccination coverage with three doses of the vaccine is only 66.6% in the study population. Good awareness in standard precautions considering all five elements together was seen in 57% of respondents. Good practice of standard precautions was seen in 52% of doctors. When the individual elements were considered separately, good practice was seen the least for waste disposal. Most respondents had good practice in hand hygiene and cough hygiene. **Conclusion:** Deficient adherence to standard precautions among health-care providers warrants new induction and monitoring strategies.

KEY WORDS: Adherence; Infection Control; Standard Precautions; Resident Doctors

INTRODUCTION

It has been estimated that healthcare-associated infections affect one in 10 patients each year.^[1] The chance of getting HIV infection after a prick from an infected person is

0.3%, hepatitis C virus is 1.8%, but the chance of getting a hepatitis B virus infection ranges from 6% to 30%, respectively.^[2] Infection control is imperative for the patient as well as health-care personnel's safety. It is a significant issue within health-care delivery systems worldwide, which has led to increased media and political attention. Infection control measures have been identified as capable of preventing hospital-acquired infections.^[3-5] The measures were first developed in 1987, by the US Centre for Disease Control and Prevention, in response to the HIV/AIDS pandemic but have now been expanded to include all possible hospital-acquired infections.^[6-8] The measures include hand hygiene, use of personal protective equipment (PPE), needle

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safety, safe handling of potentially contaminated equipment, or surfaces in the patient environment, respiratory hygiene (cough etiquette), and proper disposal of sharps, body fluids, and other clinical waste.^[9] The measures also include practices such as the training and retaining of health care workers on the infection control measures, immunization of health care workers against the more prevalent, more fatal infections, and the surveillance of the infectious diseases in the health-care facility.^[3-5] Studies, however, indicate that complete adherence to the infection control measures is vital to the prevention of hospital-acquired infections.^[3-6] The adherence to the policy has been shown to be influenced by factors that are not only related to the knowledge and attitude of health workers but also to health facility-related factors such as the provision of the needed medical consumables, the presence of a functional infection control policy and committee, as well as the seriousness with which the policy is enforced in the health facility. Standard precautionary measures are a set of infection control practices used to prevent infection from the health personnel to the patients and caregivers and vice versa.^[10] This concept replaced the earlier Universal Precaution in 1996.^[11] When health professionals do not follow infection control measures, then the health-care settings will be a source for infections which could at times lead to outbreaks in the community.^[12] Many exposures can be prevented by careful adherence to the existing infection control precautions, immunization against hepatitis B, and provision of PPE during the management of emergencies.^[2-4] From literature review, we understood that awareness was the base, and this alone would not help, but the practice of standard precautions is the one that can reduce the load of healthcare-associated infections. The present study focuses to determine the level of awareness, practices, and adherence to standard precautions for infection control among health personnel.

MATERIALS AND METHODS

An observational study was conducted in December 2018. After obtaining ethical clearance from the Institutional Ethics Committee, the study was carried out among the resident doctors of obstetrics and gynecology working in the post-natal care ward (PNC) at a tertiary care hospital. Using a complete enumeration technique, 21 resident doctors who were present in 24 h shift duty in a week were included in the study. A list of the resident doctors working in the PNC ward was made. A structured validated interview schedule was used to study the level of awareness, practices, and adherence to standard precautions for infection control.^[13] The schedule had four sections: The first section had questions on general information which included demography and service details. The second section had questions in training and protocols. The third section was to assess awareness of hand hygiene, PPE, safe injection practices (SIPs), and decontamination and waste disposal. The fourth section was used to assess

the practice of the use of hand hygiene practices, PPE, SIPs, and decontamination and waste disposal practices. The last section consisted of questions to assess difficulties in practice and availability of resources. Ethical considerations were carefully and systemically adhered to throughout the study. Informed consent was obtained before the interview. Privacy and confidentiality of all the informants were maintained. Data were collected, entered into Microsoft Office Excel and analyzed using SPSS version 22.

RESULTS

The present study was conducted with the objective to determine the awareness, practices, and adherence to standard precautions for infection control among resident doctors. The mean age of respondents was 27.85 ± 3.2 years. The total years of service were divided into three categories 1–2 years, 2–3 years, and more than 3 years. Nearly 60% of the respondents were in 2–3 years group [Table 1]. Exposure to infection control measures was assessed based on the training received by the resident doctors in standard precaution and various related subjects, on what measures are used for infection control and on whether they are fully immunized against hepatitis B as per the schedule. All resident doctors said that they had received training during their residency/hospital service. HIV/AIDS training was received by 90.5% of respondents. About 71% of the study population had received training in standard precautions. Specific infection control protocol as suggested in standard precautions was followed for infection control by 76% of the population. The variable use of specific protocol had three options, the first one was following protocols on infection control, the second follows self-discipline, and the third does nothing. About 76% said that they followed protocols on infection control, 19% agreed on the following self-discipline, and 5% answered that they followed both the protocol and self-discipline. Hepatitis B vaccination coverage with three doses of the vaccine is only 66.6% in the study population. Standard precautions could be followed effectively only if the specific resources essential for its practice are available. Table 2 shows that 100% of the respondents said that alcohol-based hand rub and gloves were available in the ward for use. According to 80.9% of the respondents, signboards were available and 85.7% said that aprons were available as PPE. Puncture-free containers were available according to 42.8% of respondents. Signboards for waste disposal were available according to 62% of the respondents and 52.4% said that color-coded bags/containers were available for use. Isolation facilities were not available.

The awareness in standard precautions was the first outcome variable studied. Good awareness in standard precautions meant comprehensive knowledge on all aspects of standard precaution. The respondents had to answer all the questions related to the specific element correctly to get classified as having good awareness. Table 3 shows that good awareness

in standard precautions considering all five elements together was seen in 57% of respondents. Table 4 depicts the practice of standard precautions which was the other outcome variables studied. Good practice in standard precautions meant strict adherence to all aspects of standard precaution. The respondents had to answer all the questions related to the specific element positively to get classified as having

Table 1: Exposure to infection control measures among the sample population

Age group category (years)	n (%)
1–2	47.6
2–3	23.8
>3	28.5

Table 2: Availability of resources in the ward for practice of standard precautions

Elements	n (%)
Hand hygiene	
Alcohol-based hand rub	21 (100)
Hand gloves	21 (100)
PPE	
Aprons	18 (85.7)
Signboards	17 (80.9)
Cough hygiene	
Safe spectacles/face mask	14 (66.6)
SIP	
Puncture-free containers	9 (42.8)
Waste disposal	
Color-coded containers	11 (52.4)
Signboards	13 (62)

PPE: Personal protective equipment, SIP: Safe injection practice

Table 3: Awareness of standard precautions

Elements	n (%)
All elements	12 (57)
Hand hygiene	20 (95.2)
PPE	13 (76.2)
Cough hygiene	18 (85.7)
SIP	17 (81)
Waste disposal	17 (81)

PPE: Personal protective equipment, SIP: Safe injection practice

Table 4: Practice of standard precautions

Elements	n (%)
All elements	11 (52)
Hand hygiene	20 (95.2)
PPE	12 (57.1)
Cough hygiene	18 (85.7)
SIP	17 (81)
Waste disposal	7 (33.3)

PPE: Personal protective equipment, SIP: Safe injection practice

good practice. Good practice of standard precautions was seen in 52% of doctors. When the individual elements were considered separately, good practice was seen the least for waste disposal. Most respondents had good practice in hand hygiene and cough hygiene.

DISCUSSION

The present study shows varying degrees of adherence with the different measures contained within standard precautions. About 71% of the study population had received a training in standard precautions. Specific infection control protocol as suggested in standard precautions was followed for infection control by 76% of the population. Hepatitis B vaccination coverage with three doses of the vaccine is only 66.6% in the study population. Good awareness in standard precautions considering all five elements together was seen in 57% of respondents while good practice of standard precautions was seen in 52% of doctors. When the individual elements were considered separately, good practice was seen the least for waste disposal. Most respondents were found to have good practice in hand hygiene and cough hygiene.

Awareness regarding standard precautions was assessed by checking knowledge in all the aspects of standard precautions as the criteria. The respondent was supposed to answer all the questions related to awareness in standard precautions to consider him/her as having good awareness. Standard precautions were divided into five elements for the ease of analysis and awareness in each of these elements was analyzed individually as well. About 57% of the respondents had good awareness in standard precautions considering all five elements. These findings are in confirmation with a study published in 2013 among 4439 health-care professionals in 34 institutions in France showed that 39.3% of the study subjects had good knowledge of standard precautions.^[14] When the five components of standard precaution were considered separately, it was seen that the doctors have good awareness in waste disposal and decontamination (81%), hand hygiene (95.2%), PPE use (76.2%), cough hygiene (85.7%), and SIP (81%). Good awareness of PPE use was found in 64% of the respondents. Good awareness in cough hygiene was found in 78.8% of the respondents and that in SIP was found in 93.5%. These findings are in confirmation with the findings of a study conducted among the health care workers in Jamaica (2007), in which it was found that almost two-thirds (64%) of the respondents were having good knowledge of Universal Precautions.^[15] A study investigating tuberculosis (TB) infection control knowledge, practices, and environment at Pelonomi Hospital, South Africa, showed approximately half of the respondents (47%) answered questions related to PPE correctly.^[16]

Level of practice in standard precautions was analyzed considering strict adherence to the practice of all aspects

of standard precautions as good practice. All the questions in practice had to be answered positively to get labeled as having a good practice. Of the 21 respondents, only 11 (52%) had good practice in standard precautions. This finding was in confirmation with a study conducted among health care workers in public health-care facilities in Ethiopia which showed not very good and changing the practice of standard precautions.^[17] When the individual elements were considered separately, good practice was seen the least for waste disposal. Most respondents had good practice in hand hygiene and cough hygiene. These findings are in confirmation with our findings on hand hygiene practices. A study investigating TB infection control in South Africa showed 84% of respondents reported that they asked coughing patients to practice respiratory etiquette.^[16] A study conducted during 2009–2010 in Saudi Arabia showed an overall hand hygiene compliance rate of health-care professionals reached 50%.^[18] Four questions were used to assess the good practice of hand hygiene, of which two were answered positively by more than 95% of the respondents, whereas the two questions related to cleaning hands and changing gloves between every patient contact were answered positively by less than one-third of the respondents. It seems that the respondents are less aware and concerned about the possible spread of infection from one patient to another through the hands of the health-care provider. Fourteen resident doctors showed all three doses of coverage for hepatitis B vaccine. This finding is in confirmation with a cross-sectional study carried out on resident doctors (2014) in a tertiary care hospital in the city of Mumbai, in which of 273 residents, 205 had taken three or more hepatitis B vaccination, an integral part of prevention program at any workplace.^[19] It was found that in certain elements, the practice was high. This could be that without perceiving the actual knowledge things were being done routinely.

Lack of awareness in standard precautions, lack of a positive attitude toward the practice of standard precautions, and lack of the resources essential for effective practice were the possible hindrances to the practice of standard precautions. The essential resources readily available were the gloves and alcohol-based hand rub (100%). Puncture-free containers, safe receptacles, and signboards were least available. Isolation facilities were not available. There was a positive effect of the availability of resources and practice of standard precautions. Hence, lack of these resources could be a hindrance to the practice of standard precaution.

The strength of this study is that it assesses the awareness and practices of resident doctors working in postnatal ward, who are the key persons involved in obstetric patient care. The collection of data was done entirely by direct interview and observations on practices were made by the same investigator to reduce bias. The limitation of this study is that it is limited to single wards' resident doctors, so the results may not be generalized. Furthermore, the data were

collected purely by subjective means so actual practice may be even less.

CONCLUSION

It was found that awareness and practice were somewhat deficient in the study population. Although the level of awareness and practice was comparable to that of many previous studies, it is not acceptable as it does not provide a safe work environment for the health providers. As the standard precautions are mandatory in infection control, and only proper practice of all aspects of the standard precautions can ensure freedom from the risk of transmission of such infections, anything less than full adherence to the protocols is unacceptable. Thus, good awareness and good practice were so defined that right answer to all questions on various aspects of standard precautions was expected. More than 50% of the respondents had good awareness in hand hygiene, use of PPE, SIP, and respiratory hygiene, and waste disposal only 18.5% had good awareness. The transmission of infection from patient to patient through the hands of the health care worker is an important mode of spread as suggested in the standard precautions. From this study, it seems that this is the most neglected element by most of the health care workers as the practice of cleaning hands in between patient contacts was least practiced by the study population. The availability of resources had a positive influence on awareness in decontamination and waste disposal and on practice of hand hygiene and respiratory hygiene. There is a marked gap found in hepatitis B vaccination coverage (only 66.6% coverage) among resident doctors. This points toward the need of implementation of such protocols more effectively in the administrative levels. As the awareness and practice of standard precautions are deficient in the study population, it is highly recommended that new induction and monitoring strategies should be initiated. Lack of resources necessary for the practice of standard precautions and lack of proper training in standard precaution are found to be the factors that hinder effective implementation of the protocols for infection control. Thus, training in standard precautions has to be imparted to all the doctors. It is recommended that the administration of the health institutions should consider these matters seriously and take necessary steps to ensure uninterrupted supply of such resources. Hepatitis B vaccination should be provided free of cost to all health-care personnel and the titers monitored 2 months after the schedule has been completed to ensure immunity.

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